



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,569	08/18/2005	Noriyoshi Sato	124305	4496
25944 7590 05/01/2008 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
EVERHART, CARIDAD				
ART UNIT		PAPER NUMBER		
2891				
MAIL DATE		DELIVERY MODE		
05/01/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/539,569

**Applicant(s)**

SATO ET AL.

**Examiner**

Caridad M. Everhart

**Art Unit**

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6-17-2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 6-17-2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3,4,6-13,16, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller et al (US 2003/0070913A1).

Miller et al discloses a plasma ionization source(paragraph 0002). Miller et al disclose capacitive discharge methods (paragraph 0009). The electrodes used in the chamber may have a layer of material for protection(paragraph 0019 ). The coating on the electrode is a non-conductive coating(paragraph 0108). A gap separates the electrodes(paragraph 0085). The electrodes may be in the form of metal plates or cylinders(paragraphs 0025 and 0091 and 0093), and the electrodes form a capacitor(paragraph 0009 and 0079). The energy is supplied by AC voltage(the abstract discloses alternating current). Fig. 11 and 12 show a third electrode 60 separated from the first electrode 14 by a layer of dielectric (paragraph 0092). Fig. 13A shows that the electrode may be a plurality of electrodes interconnected in series(paragraph 0093). The electrodes form a flow channel for the flow of gas(paragraph 0109). Miller et al further disclose that in order to supply power with stability that a circuit with a capacitor is placed between the power source and the

Art Unit: 2891

electrode(paragraph 0059 and 0115). The discharge is intermittently, as Miller et al disclose that the discharge is pulsed(paragraphs 0024 and 0056). It is seen in Fig. 3A that the outer electrode 35 has an opening through which the divided first electrode is placed. Miller teaches the system in a chamber(paragraph 0008). Miller et al further discloses that the electrodes with the dielectric in between the electrodes functions as a capacitor(paragraph 0058 and 0079). In Fig. 3A it is shown that electrode 35 has an opening(paragraph 0031).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a). The pressure of operation of the device is atmospheric pressure(paragraph 0018).

Claims 2, 15, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al as applied to claim 1 above..

Miller et al is silent with respect to an ozone generator and with respect to the use of ozone in the chamber.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the apparatus taught by Miller et al includes an ozone generator because Miller et al disclose that the gas may be air (paragraph 0018).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al as applied to claim 1 above, and further in view of Cooper et al (US 6,833,121).

Miller et al is silent with respect to cooling.

Cooper et al disclose that the heat generated by plasma generation electrodes can be removed by a cooling jacket in order to remove the significant heat which is generated by the electrodes(col. 1, lines 29-37 and col. 2, lines 50-54).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the cooling taught by Cooper et al with the device and method taught by Miller et al in order to gain the advantages of removing the heat as taught by Cooper et al.

The prior art of record not relied upon is considered relevant to applicant's disclosure.

Babko-Malyi (US 2003/0106788A1).

Babko-Malyi discloses a plasma generator in which the electrodes are in a slit or channel (paragraph 0009) and the plurality of electrodes are connected to a power supply and are separated by a dielectric (paragraph 0009 and Fig. 1). The dielectric and the gaps in the dielectric separate a segmented electrode the segments of which are attached to the same power source 12 (paragraph 0027). An electrode 16 is separated by a gap from these electrodes and may also have a dielectric covering (paragraph 0027 and 0028). The shape of the electrodes may also be rods or cylindrical (paragraph 0030). The discharge is intermittent, as Babko-Malyi discloses that the discharge is pulsed (paragraph 0035). Babko-Malyi teaches the system in a reactor (Abstract).

Kong et al (US 2005/0115933A1).

Kong et al disclose an AC plasma generator (paragraph 0006). Kong et al disclose a chamber and 3 electrodes along an axis coupled to an AC power supply (paragraph 0012). The reactor includes a housing or chamber and a fluid inlet and outlet and first to third electrodes (paragraphs 0033, 0043, and 0048).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 571-272-1892. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

Art Unit: 2891

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, B. Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Caridad Everhart/  
Primary Examiner  
AU 2891

4-21-2008